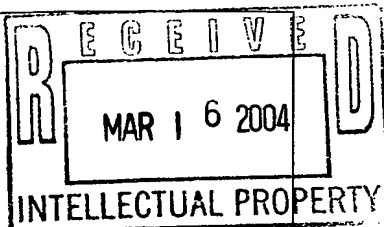


From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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Cincinnati, Ohio 45202
ETATS-UNIS D'AMERIQUE



PCT

WRITTEN OPINION
(PCT Rule 66)

| | | | |
|--|--|--|---|
| Applicant's or agent's file reference 0514306 | | Date of mailing (day/month/year) | 11.03.2004 |
| International application No. PCT/US 03/07631 | | International filing date (day/month/year) | 12.03.2003 |
| International Patent Classification (IPC) or both national classification and IPC B01D53/64 | | Priority date (day/month/year) | 12.03.2002 |
| Applicant BATTELLE MEMORIAL INSTITUTE et al. | | REPLY DUE | within 3 month(s) from the above date of mailing |

Date Rec'd: _____
Next Action: Response
Due Date: 6/11/04
Docketed by: [Signature]
Case No: 3/30/04


- This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
- This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☒ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
- The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
- The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 12.07.2004

| | |
|---|---|
| Name and mailing address of the international preliminary examining authority: | Authorized Officer |
|  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | de Biasio, A Formalities officer (incl. extension of time limits) Fuerbass, C Telephone No. +49 89 2399-8132 |



I. Basis of the opinion

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-18 as originally filed

Claims, Numbers

1-10 as originally filed

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application,

☒ claims Nos. 2

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 2

2. A written opinion cannot be drawn due to the failure of the nucleotide and/or amino acid sequence listing to comply with the Standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

IV. Lack of unity of invention

1. In response to the invitation (Form PCT/PEA/405) to restrict or pay additional fees, the applicant has:

☐ restricted the claims.

☐ paid additional fees.

☐ paid additional fees under protest.

☒ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with for the following reasons and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees:

see separate sheet

3. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this opinion:

☐ all parts.

☒ the parts relating to claims Nos. 1,3-5,7-9 (all partially) .

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

WRITTEN OPINIONInternational application No. **PCT/US 03/07631**

| | | |
|-------------------------------|--------|-----------|
| Novelty (N) | Claims | 1,4,5,9 |
| Inventive step (IS) | Claims | 1,3-5,7-9 |
| Industrial applicability (IA) | Claims | |

2. Citations and explanations**see separate sheet**

Re Item III and IV

Basis of the opinion; non-establishment of opinion with regard to novelty, inventive step and industrial applicability; lack of unity of invention

The applicants not having paid additional fees as requested (see previous communication), only the first invention will be examined as far as novelty, inventive step and industrial applicability are concerned.

The first invention is limited to claims 1,3-5,7-9 only for the case of gas treatment.

The reasons for the objection of lack of unity (Rule 13.1 PCT) have already been communicated to the applicants in the previous communication and in the search report.

Claim 2 has not been searched and therefore no substantive examination will be performed (see also comment under item V.3)

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1.1 DE-A-19745191 (D1) discloses a process for treating i.a. gas containing heavy metals (col. 1, ll. 3-11) by the step of contacting the heavy metal containing gas with bauxite (col. 2, ll. 15-17; claim 1).

D1 appears to be novelty destroying for the subject-matter of claim 1 (Art. 33(2) PCT).

- 1.2 The process of modifying bauxite as defined in claim 2 should be known from US-A-2.391.116, cf col. 1, line 49, to col. 2, line 7, D2 also using bauxite for treating gases (col.1, ll. 21-22). The process of claim 2 does not seem to involve an inventive step (Art. 33(3)PCT). In D2 the heating is performed at temperatures as low as 400°F, corresponding to 204,4°C, i.e below 300°C as mentioned in present claim 3. Also GB-A-1.378.451 (D3) teaches to activate bauxite by heating at temperatures less than 325°C (cf page 1, ll. 51-55) in order to obtain a greater surface area.

Moreover, D1 teaches to prepare the sorbent material by heating at temperatures lying within the range of claim 3 (cf col. 2, ll. 24-29). This passage of D1 is also novelty destroying for the subject-matter of claims 4 and 5 (Art. 33(2) PCT).

The sorbent of D1 is also said to be suitable for using for dry sorption processes (col. 3, ll. 43-45). Thus it would be an obvious possibility for the skilled person to secure the sorbent of D1 to a permeable fabric, the latter being either in vertical or horizontal position. No inventive step can be seen in the additional technical features of claim 7 and 8.

D1 also foresees to mix the sorbent material with the gas to be treated (col.3, ll. 37-42). The process of claim 1 is not new over D1 (Art. 33(2) PCT).

2. DE-A-19936930 (D4) relates to a process for removing mercury from gases from flue gases. Bauxite is mixed with sulphur and added to the flue gases in order to capture mercury (cf claims 1 and 3). Thus D4 should be novelty destroying for claims 1,4,5,9 (Art. 33(2) PCT).

US-A-5.245.106 (D5) also concerns a process for eliminating mercury and/or arsenic from gases by using as a sorbent material containing copper sulfide (cf claim 1 of D5) mixed with i.a. bauxite (col.2, ll. 17-21). D5 further teaches to prepare the sorbent material by heating at temperatures below 300°C, see e.g. col. 5, ll. 15-20).

3. Although claim 2 has not been searched, the a.m. documents all appear to be novelty destroying for the process defined therein (Art. 33(2) PCT).
4. It is not at present apparent which part of the application could serve as a basis for a claim fulfilling the requirements of Art. 33(2)(3) PCT. Should the applicant nevertheless regard some particular matter as new and inventive, an independent claim should be filed taking account of Rule 6.3(b). The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.